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## PATENT ABSTRACTS OF JAPAN

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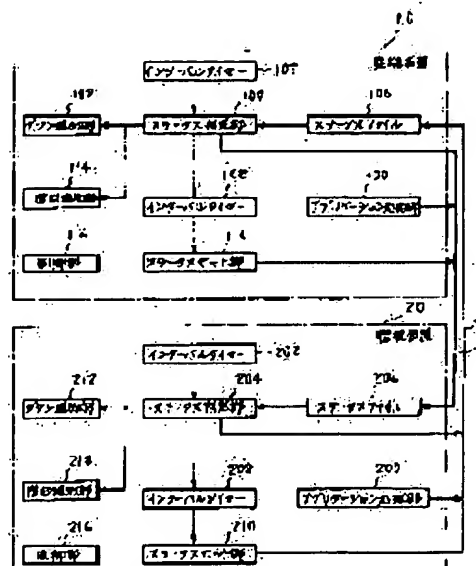
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## (54) CLIENT SERVER SYSTEM MONITOR AND METHOD

## (57)Abstract:

PROBLEM TO BE SOLVED: To provide a client server system monitor that can easily monitor an operating state of a client server system.

SOLUTION: A status file 106 in a monitor 10 receives an operating state status signal from a monitor 20 and stores status information denoted by the operating status signal. A status discrimination section 104 reads status information from the status file 106 according to a timing from an interval timer 102 to discriminate the operating state of the system of the monitor 20, and when system-down is discriminated, the status discrimination section 104 informs a client under the control about the occurrence of system down via a down notice section 112 when the section 104 discriminates system-down, and informs the client under the control about restoration of the system via a restoration notice section 114 when the section 104 discriminates the restoration of the system. On the other hand, a status set section 110 generates an operating status signal according to the timing from an interval timer 108 and provides an output to the monitor 20. The monitor 20 is operated in a way similar to the monitor 10.



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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] LAN with the same this invention -- it is a top (Local Area Network) -- it is -- the same WAN -- it is related with the client/server system supervisory equipment and the approach of supervising the operating status of two or more client/server systems which work in a top (WideArea Network).

[0002]

[Description of the Prior Art] Two or more client/server systems which have the function which became independent with development of a client/server system in recent years are the network of the same domain, for example, LAN. Or WAN The case where it works to coincidence in a top is increasing.

[0003] There were an approach the system administrator of the approach of detecting by knowing whether the application which a server offers as an approach of detecting a down and restoration of a client/server system with the personal computer whose user is a client can be used conventionally, and each client/server system supervises and detects operating status with a monitor etc. always or periodically, an approach which the monitor dedicated server, with which it has a monitoring function is made to detect. Moreover, there was an approach of which a system administrator notifies a user with means of communication, such as oral and a telephone, as an approach of notifying a down and restoration of a client/server system.

[0004]

[Problem(s) to be Solved by the Invention] However, by the detection approach of the down of a client/server system, or restoration described above, when depending on a user for detection, the user had the problem that a down or restoration of a system could not be known until he actually used the application which a server offers. Moreover, since the system administrator of the number according to the number of client/server systems was needed when making a system administrator detect, there was a problem that many system administrators (man day) were needed. In this case, since the system administrator had to notify every user of a down and restoration of a system with means of communication, such as oral and a telephone, he had the problem that a notice took time amount. Moreover, when detecting with the monitor dedicated server which has a monitoring function, since high dependability was required of the monitor dedicated server, the monitor dedicated server became expensive, and there was a problem that big costs were needed for the installation.

[0005] This invention solves the trouble of such a conventional technique, it supervises the operating status of each client/server system simple, without forming a monitor dedicated server, and aims at offering the client/server system supervisory equipment and the approach about which detect a down and restoration of a system automatically and a user is told.

[0006]

[Means for Solving the Problem] It is characterized by for this invention to include a status set means output a status signal to the supervisory equipment of a partner server during the operation which is supervisory equipment contained in the server of two client/server systems which work on the same network, respectively in order to solve an above-mentioned technical problem, and shows the operating status of a self-client/server system, and a status judging means receive a status signal during the operation outputted from the supervisory equipment of a partner server, and judge the operating status of a partner client/server system based on a status signal during this operation.

[0007] Moreover, this invention is supervisory equipment contained in the server of two client/server systems which work on the same network, respectively. A status set means to output a status signal to the supervisory equipment of a partner server during the operation which shows the operating status of a self-client/server system, A status judging means to receive a status signal during the operation outputted from the supervisory equipment of a partner server, and to judge the operating status of a partner client/server system based on a status signal during this operation, When a status judging means judges with the partner client/server system having been downed, When a notice means of a down to notify the down of a partner client/server system to each client of a self-client/server system, and a status judging means judge with the partner client/server system having been restored. It is characterized by including a notice means of restoration to notify restoration of a partner client/server system to each client of a self-client/server system.

[0008] Moreover, this invention is the client/server system monitor approach which supervises the operating status of two client/server systems which work on the same network, and it is characterized by receiving a status signal during the operation outputted from a partner server, and making the operating status of a partner client/server system judge based on a status signal during this operation while making a partner server output a status signal to each server contained in two client/server systems during the operation which shows the operating status of a self-client/server system.

[0009]

[Embodiment of the Invention] Next, the example of the client/server system supervisory equipment by this invention is explained using a drawing. The client/server system supervisory equipment (henceforth supervisory equipment) by this invention is used being included in a server, for example, as shown in drawing 1, LAN and a server 4 serve as a group and supervise the operating status of a partner client/server system with each supervisory equipment. Certain \*\* WAN 7 (LAN/WAN) A server 1, a client 2, and 3 from -- the becoming client/server system, a server 4 and a client 5, and 6 from -- the network where the becoming client/server system was connected -- server 1 Server 4 supervisory equipment incorporates, respectively -- having -- this server 1

[0010] In addition, when many client/server systems (henceforth a system) work on the same network, a group is made every two servers and two servers should just supervise the operating status of a destination system mutually by each class. Moreover, one server makes two or more each server and groups, and you may make it supervise the operating status of a destination system for each class. For example, Server A may make Server C and a group and may supervise the operating status of a destination system mutually at the same time it makes Server B and a group and supervises the operating status of a destination system mutually.

[0011] In addition, it sets to drawing 1 and is a server 1. It adds to the function to process specific application, and is a server 4. It is server equipment which has the function (supervisory equipment) which supervises the working state of a side system, and is a client 2 and 3. Server 1 They are terminal units, such as a personal computer which has the man machine interface function of displaying guide MESE&JI etc. on a screen based on control. Moreover, server 4 It adds to the function to process specific application, and is a server 1. It is server equipment which has the function (supervisory equipment) which supervises the working state of a side system, and is a client 5 and 6. Server 4 They are terminal units, such as a personal computer which has the man machine interface function of displaying guide MESE&JI etc. on a screen based on control.

[0012] Drawing 2 is one example of the supervisory equipment by this invention. Setting to drawing 2, supervisory equipment 10 is the server 1 of drawing 1. It is contained and supervisory equipment 20 is the server 4 of drawing 1. Contained, supervisory equipment 10 and supervisory equipment 20 supervise the operating status of a destination system, exchanging operation information mutually through LAN/WAN7. In addition, since the configuration of supervisory equipment 10 and 20 is the same, taking the case of supervisory equipment 10, it explains below.

[0013] It sets to drawing 2 and is the application process section 100 of supervisory equipment 10. The application process of server original is performed. However, by this example, since a monitoring function is also included, it has indicated as some supervisory equipment. In case this application process section 100 ends an application process for the initiation status signal which shows initiation (operation initiation) of an application process prior to initiation of an application process, it outputs the exit-status signal which shows termination (operation termination) of an application process to supervisory equipment 20, respectively. Moreover, the application process section 100 An initiation indication signal of operation is generated prior to initiation of an application process. The output of the initiation indication signal of the application process section 100 of operation is an interval timer 102. It connects with the input and this initiation indication signal of operation is an interval timer 102. It is inputted.

[0014] interval timer 102 The application process section 100 from -- the starting indication signal repeatedly generated in the time interval T1 defined beforehand is generated by starting actuation, if an initiation indication signal of operation is given, for example, carrying out counting of the predetermined clock with a counter. in addition, interval timer 102 The application process section 100 from -- after starting actuation with the first initiation indication signal of operation -- control section 116 from -- actuation is continued until there are directions of a halt of operation. Interval timer 102 An output is the status judging section 104. It connects with the input and is an interval timer 102. The generated starting indication signal is the status judging section 104. It is inputted.

[0015] On the other hand, it is a status file 106. Server 4 As it is the memory which stores status information required in order to judge the operating status of a side system, for example, is shown in drawing 3, they are the status field 304, the exit-status field 306, and the waiting status field 308 for restoration during the server identifier field 300, the initiation status field 302, and operation. It contains. In addition, when supervising two or more systems, these fields are prepared for every system.

[0016] Server identifier field 300 The server identifier 4 for discriminating the server of the system used as the candidate for a monitor from other servers, for example, a server, It is the field which stores a server name. Initiation status field 302 Server 4 It is the field which stores the beginning flag which shows that operation was started, and is the status field 304 during operation. Server 4 It is the information which shows the operating status of a side system, for example, the field which stores a "date time second." Exit-status field 306 Server 4 It is the field which stores the ending flag which shows that operation was ended, and is the waiting status field 308 for restoration. Server 4 It is the field which stores the waiting flag for restoration which shows that a side system is downed and it is in the condition of the waiting for restoration.

[0017] thus, constituted status file 106 \*\*\*\* -- server 4 from -- the status signal sent is inputted. Status file 106 A beginning flag is reset while it sets a beginning flag when an initiation status signal is inputted, and setting an ending flag, when an exit-status signal is inputted. Moreover, server 4 When a side system is downed, it is the status judging section 104. According to directions, while setting the waiting flag for restoration, a beginning flag is reset, and it is the status field 304 during operation further. It clears. Server 4 When a side system is restored, it is the status judging section 104. The waiting flag for restoration is reset according to directions.

[0018] moreover, status file 106 the "date time second" which a status signal shows during the operation when a status signal is inputted during operation -- under operation -- status field 304 It stores. this example -- under operation -- status field 304 the "date time second" which a status signal shows during the operation when Field A and Field B are formed and a status signal is

inputted during operation -- Field A -- storing -- the status judging section 104 the time of status judging processing in which it can set being completed -- the status judging section 104 According to directions, the same contents as the contents of the field A are written in Field B.

[0019] Thereby, just before status judging processing, when a status signal is inputted during operation, the "date time second" which a status signal shows during the operation inputted this time is stored in Field A, and the "date time second" which a status signal shows during the operation inputted into Field B last time is stored. However, when a status signal is not inputted during operation this time, the "date time second" which a status signal shows during the operation inputted last time will be stored in Field A and Field B.

[0020] the status judging section 104 Interval timer 102 from -- if a starting indication signal is given -- each time -- status file 106 from -- server 4 status information -- reading -- predetermined status judging processing -- performing -- server 4 The operating status of a side system is judged and processing according to the judgment result is performed. Specifically, it is a status file 106. It is a server 4 when a beginning flag is set. It judges with having started operation and the initiation indication signal of operation which directs output initiation of a status signal during operation is generated. In addition, server 1 It is a server 4 after starting operation. When operation is started, the initiation status signal which shows that the self-server has started operation so that it may mention later is generated.

[0021] Moreover, the status judging section 104 Initiation status field 302 It is a server 4 when the flag is set. It judges whether the side system is working normally. this example -- under operation -- status field 304 the time of reading the "date time second" of the field A which can be set, and Field B, comparing, and being different -- server 4 It judges with the side system working normally. In this case, there is no processing corresponding to a judgment result. However, when the same, there is no input of a status signal during operation, and it is a server 4. While judging with the side system having been downed and generating the notice indication signal of a down, it is a status file 106. It receives, the waiting flag for restoration is set, a beginning flag is reset, and it is the status field 304 during operation. It directs to clear.

[0022] Moreover, the status judging section 104 Server 4 downed when the waiting flag for restoration was set and a beginning flag was set While judging with the side system having been restored and generating the notice indication signal of restoration, it is a status file 106. It directs to receive and to reset the waiting flag for restoration. Moreover, it is a server 4, when the beginning flag is set and an ending flag is set. It judges with having ended operation and is a status file 106. It is a server 4 until it directs to receive and to reset a beginning flag and a beginning flag is set henceforth. The judgment of whether the side system is working normally is stopped. In addition, when supervisory equipment 10 supervises two or more systems, sequential execution of the above-mentioned status judging processing etc. is carried out to less than [ time interval T1 ] about each server.

[0023] The notice indication signal of a down is inputted into the notice section 112 of a down, and the notice indication signal of restoration is inputted into the status judging section 104 at the notice section 114 of restoration, respectively. The output of an initiation indication signal of operation, the output of the notice indication signal of a down, and the output of the notice indication signal of restoration are an interval timer 108, respectively. An input and the notice section 112 of a down An input and the notice section 114 of restoration It connects with the input and it is the status judging section 104. generated initiation indication signal of operation is an interval timer 108. Moreover, the status judging section 104 The generated initiation status signal is outputted to supervisory equipment 20.

[0024] interval timer 108 The status judging section 104 from -- the starting indication signal repeatedly generated in the time interval T2 defined beforehand is generated by starting actuation, if an initiation indication signal of operation is given, for example, carrying out counting of the predetermined clock with a counter. interval timer 108 The status judging section 104 from -- after starting actuation with an initiation indication signal of operation -- control section 116 from -- actuation is continued until there are directions of a halt of operation. Control section 116 A system is at the time 100 of a halt, for example, the application process section, about actuation by a certain cause. When processing is interrupted for a certain cause, it is an interval timer 108. A halt of operation is directed. Interval timer 108 An output is the status set section 110. It connects with the input and this starting indication signal is the status set section 110. It is inputted.

[0025] the status set section 110 Interval timer 108 from -- if a starting indication signal is given, a status signal will be generated during operation and it will output to supervisory equipment 20 each time. A status signal is a partner's server 4 about the self-system working normally during this operation. It is the signal to tell and this example shows the "date time second" which changes every moment. It is a server 1 by receiving a status signal in supervisory equipment 20 during the operation sent from supervisory equipment 10, and detecting that the "date time second" which a status signal shows during the operation changes for every reception. It judges with the side system working normally. In addition, when supervisory equipment 10 supervises two or more systems, a status signal is outputted to less than [ time interval T2 ] during operation to the supervisory equipment of each server.

[0026] By the way, the above-mentioned interval timer 102 The time interval T1 and interval timer 108 of a starting indication signal which are generated As for the time interval T2 of the starting indication signal generated, it is desirable to set up so that the relation of  $T1 > T2$  may be materialized. Also in supervisory equipment 20, it is the same. the case where it is set as  $T1 > T2$  -- the status judging section 104 since activation spacing of status judging processing in which it can set becomes larger than spacing to which a status signal is sent during operation from supervisory equipment 20 -- the status judging section 104 \*\*\*\* -- status judging processing can be performed to a status signal during all operation sent from supervisory equipment 20. The concrete value of time intervals T1 and T2 is a network 7. It is determined in consideration of traffic, the number of client/server systems, etc.

[0027] the notice section 112 of a down The status judging section 104 from -- the time of the notice indication signal of a down being given -- server 1 The client 2 currently controlled and 3 receiving -- LAN/WAN7 -- minding -- server 4 the down of a side system -- notifying -- a client 2 and 3 the man machine interface function which is not illustrated -- using -- server 4 A user is told about the side system having been downed. the notice section 114 of restoration The status judging section 104 from -- the time of the notice indication signal of restoration being given -- server 1 the client 1 currently controlled and 3 -- receiving -- LAN/WAN7 -- minding -- restoration of a server 4 side system -- notifying -- clients 2 and 3 the man machine interface function which is not illustrated -- using -- server 4 A user is told about the side system having been restored.

[0028] In addition, the notice section 112 of a down When the notice indication signal of a down is given, the function which notifies a system administrator of this by E-mail etc. is included, and it is the notice section 114 of restoration. When the notice indication signal of restoration is given, it is desirable to include the function which notifies a system administrator of this by E-mail etc. By these functions, it is a server 4. A system administrator can be automatically told about a down and restoration of a side system. Moreover, the notice section 112 of a down And the notice section 114 of restoration The demand of a client is accepted and it is a server 4 suitably. It is desirable to include the function in which the information about a down and restoration of a side system can be offered.

[0029] Control section 116 A control signal etc. is outputted to each part, the actuation is controlled, and a man machine interface function is included. A system administrator uses this man machine interface function, for example, is the application process section 100. Starting, an interval timer 102, and 108 A halt of operation etc. can be directed.

[0030] in addition, the above-mentioned status judging section 104, the notice section 112 of a down, and the notice section 114 of restoration etc. -- the monitor processing and the application process section 100 which can be set the case where processing which can be set is performed with the same processor -- monitor processing -- as interruption processing -- an interval timer 102 and 108 Application process 100 You may constitute so that processing may be interrupted.

[0031] Thus, the server 1 of the network which the constituted supervisory equipment 10 and 20 shows to drawing 1 and 4 Actuation of the supervisory equipment 10 and 20 in the case of being contained, respectively is explained below.

[0032] When it connects with LAN/WAN7 and a system is started in supervisory equipment 10 and 20, it is a status file 106 and 206 to the beginning. It initializes. For example, with supervisory equipment 10, it is a control section 116. Server 4 inputted by minding It is the server identifier field 300 of a status file 106 about Server Name. While storing and resetting a beginning flag, an ending flag, and the waiting flag for restoration, respectively, it is the status field 304 during operation. The contents are cleared. Drawing 4 (a) Status file 116 at the time of initialization A condition is shown. With supervisory equipment 20 as well as supervisory equipment 10, it is a status file 206. It initializes.

[0033] A server 1 and 4 It is after initial setting, the application process section 100, and 200. Operation is started by starting and it is the application process section 100 and 200. It goes into the monitor organization of a destination system by the first starting. For example, the application process section 100 of supervisory equipment 10 An application process is started, for example by powering on. In this case, the initiative is taken in initiation of the application process of server original, and it is an interval timer 102 about an initiation indication signal of operation. While outputting, the initiation status signal which shows operation initiation is outputted to supervisory equipment 20.

[0034] interval timer 102 \*\*\*\* -- the application process section 100 from -- the starting indication signal repeatedly generated in the time interval T1 which started actuation when the initiation indication signal of operation was given, and was defined beforehand -- generating -- the status judging section 104 It outputs. henceforth, control section 116 from -- it operates until there are directions of a halt of operation. therefore, interval timer 102 The application process section 100 from -- actuation will be started with the first initiation indication signal of operation.

[0035] the status judging section 104 \*\*\*\* -- interval timer 102 from -- if a starting indication signal is given -- status file 106 from -- server 4 status information -- reading -- predetermined status judging processing -- performing -- server 4 The operating status of a side system is judged. Henceforth, the status judging section 104 It is a server 4 for Every time interval then. The operating status of a side system is judged. Thus, it is a server 4 when the application process section 100 is first started in supervisory equipment 10. The monitor of a side system is started. With supervisory equipment 20 as well as the case of supervisory equipment 10, it is the application process section 200. It is a server 1 by the first starting. The monitor of a side system is started.

[0036] In supervisory equipment 10 and 20, when an initiation status signal is received from partner supervisory equipment after starting the monitor of a destination system, a status signal is generated during the operation which shows the operating status of a self-system, and it outputs to partner supervisory equipment. Henceforth, in supervisory equipment 10 and 20, a status signal is outputted during operation every time interval T2 defined beforehand. In partner supervisory equipment, the operating status of a destination system is judged based on a status signal during the operation which received.

[0037] supervisory equipment 10 -- server 4 after going into the monitor organization of a side system -- server 4 from -- the initiation status signal received when the initiation status signal was received -- status file 106 It inputs. Status file 106 A beginning flag will be set if an initiation status signal is then inputted. Drawing 4 (b) Status file 106 at this time A condition is shown. Status judging section 104 Status judging processing is already then started and it is a status file 106. It is a server 4 when a beginning flag is set. It judges with having started operation. And it is an interval timer 108 about an initiation indication signal of operation. While outputting, an initiation status signal is outputted to supervisory equipment 20.

[0038] In addition, the status judging section 104 It is the application process section 100 to output an initiation status signal. When an initiation status signal is outputted to supervisory equipment 20, it is because the server 4 had not started yet. the status



judging section 104 \*\*\*\* -- the application process section 100 after outputting an initiation status signal to supervisory equipment 20, when an initiation status signal is not sent from supervisory equipment 20 in predetermined time amount, the server 4 has not worked yet -- judging -- server 4 operation initiation -- waiting -- the status judging section 104 from -- an initiation status signal is outputted supervisory equipment 20.

[0039] on the other hand -- supervisory equipment 20 -- server 4 the time of starting operation -- server 1 since it has already worked -- the application process section 200 from -- the time of outputting an initiation status signal to supervisory equipment 10 -- the status judging section 104 of supervisory equipment 10 from -- an initiation status signal is sent within a predetermined period. therefore -- the outputted initiation status signal was received by supervisory equipment 10 in supervisory equipment 20 -- judging -- the status judging section 206 from -- an initiation status signal is not outputted to supervisory equipment 10.

[0040] interval timer 108 of supervisory equipment 10 \*\*\*\* -- the status judging section 104 from -- the starting indication signal repeatedly generated in the time interval T2 which started actuation when the initiation indication signal of operation was given, and was defined beforehand -- generating -- the status set section 110 It outputs. the TETASU set section 110 \*\*\*\* -- interval timer 108 from -- if a starting indication signal is given, a status signal will be generated during the operation which shows the information which shows each time that the self-server is working normally, for example, the "date time second" which changes every moment, and it will output to supervisory equipment 20.

[0041] Thus, in supervisory equipment 10, if an initiation status signal is received from supervisory equipment 20 after operation initiation, a status signal will be henceforth repeated and outputted to supervisory equipment 20 during operation every time interval T2. When supervisory equipment 20 as well as supervisory equipment 10 receives an initiation status signal from supervisory equipment 10 after operation initiation, a status signal is henceforth repeated and outputted to supervisory equipment 10 during operation every time interval T2. In supervisory equipment 10 and 20, if a status signal is received during operation from partner supervisory equipment, the operating status of a destination system will be judged based on the signal.

[0042] For example, when a status signal is received during operation from supervisory equipment 20 in supervisory equipment 10, it is a status file 106 about a status signal during the operation. It inputs. Status file 106 When a status signal is then inputted during operation, it is the status field 304 during operation. The "date time second" which a status signal shows during operation is written in Field A. Therefore, the "date time second" which a status signal shows during the operation received this time is stored in Field A, and the "date time second" which a status signal shows during the operation received last time is stored in Field B. Drawing 4 (c) Status file 116 at this time A condition is shown. In addition, drawing 4 (c) Dm and Dm-1 are "date time seconds."

[0043] the status judging section 104 \*\*\*\* -- Tevery time interval -- status file 106 from -- server 4 Status information is read, predetermined status judging processing is performed, and the operating status of a destination system is judged. When a beginning flag is set and the ending flag is specifically reset, it is the status field 304 during operation. A "date time second" is read from Fields A and B, and it investigates whether it is different. And it is a server 4 when different. It judges with what is working normally. In this case, there is especially no processing corresponding to a judgment result. Status judging section 104 They are after judgment termination and a status file 106. It receives and is the status field 304 during operation. It directs to write the same contents as the contents of the field A in Field B.

[0044] It is the status judging section 204 about change of the "date time second" which receives a status signal during the operation outputted from supervisory equipment 10 as well as supervisory equipment 10, and a status signal shows during this operation also at supervisory equipment 20. It detects and is a server 1. The operating status of a side system is judged. Thus, in each supervisory equipment, when the initiation status signal outputted from partner supervisory equipment is received, the operating status of a destination system is mutually supervised by judging that partner supervisory equipment is in monitor organization, outputting a status signal every time interval T2, and judging the operating status of a destination system with partner supervisory equipment based on change of the "date time second" which a status signal shows during this operation during operation.

[0045] In supervisory equipment 10 and 20, when activation of an application process is ended, the exit-status signal which shows operation termination of a self-server to partner supervisory equipment is sent. In the partner supervisory equipment which received this exit-status signal, a partner server judges it as what ended operation, and stops the judgment of the operating status of a destination system.

[0046] For example, the application process section 200 of supervisory equipment 20 When activation of an application process is then ended, the termination TETASU signal which shows operation termination is outputted to supervisory equipment 10. When the exit-status signal from supervisory equipment 20 is received in supervisory equipment 10, it is a status file 106 about this exit-status signal. It inputs. Status file 106 If an exit-status signal is then inputted, a beginning flag will be reset while setting an ending flag. Drawing 4 (d) Status file 106 at this time A condition is shown. In addition, drawing 4 (c) Dn and Dn-1 are "date time seconds."

[0047] Status judging section 104 It is a status file 106. It is a server 4, when the ending flag which can be set is set and a beginning flag is reset. Server 4 based on [ judge with what ended operation and ] a "date time second" The judgment of the operating status of a side system is stopped. Henceforth, the status judging section 104 A beginning flag is then supervised and it is a server 4. It waits for resumption of operation. It is a server 1 when the exit-status signal outputted from supervisory equipment 10 as well as supervisory equipment 10 also with supervisory equipment 20 is received. The judgment of the operating status of a side system is stopped and it is a server 1. It waits for resumption of operation.

[0048] When it judges with the destination system having been downed in supervisory equipment 10 and 20, it is the notice

section 112 of a down. When it judges with having notified that the destination system was downed to each client which a subordinate has, and the destination system having been restored, it is the notice section 114 of restoration. It notifies that the destination system was restored to each client which a subordinate has.

[0049] For example, the status judging section 104 of supervisory equipment 10 It is a status file 106. When a beginning flag is set and the ending flag is reset, it is the operation status field 304 for Every time interval. A "date time second" is read and compared from Fields A and B. And the "date time second" of Fields A and B is a server 4 when the same. It judges with that to which the side system was downed. With supervisory equipment 20, it is the application process section 200, for example. When actuation is interrupted for a certain cause, the output of a status signal is suspended during operation. For this reason, status file 106 in supervisory equipment 10 The "date time second" stored in Fields A and B becomes the same. Therefore, the "date time second" of Fields A and B is a server 4 when the same. It is judged that the side system was downed.

[0050] Status judging section 104 It is a server 4. When it judges with the side system having been downed, it is the notice section 112 of a down. The notice indication signal of a down is outputted. the notice section 112 of a down \*\*\*\* -- the status judging section 104 from -- if the notice indication signal of a down is given -- server 1 The client 2 which a subordinate has, and 3 receiving -- server 4 It notifies that the side system was downed. Thereby, it is a client 2 and 3. A user is a server 4. It can know that the side system was downed. Status judging section 104 The output of the notice indication signal of a down is then followed, and it is a status file 106. It receives, the waiting flag for restoration is set, a beginning flag is reset, and it is the status field 304 during operation. It directs to clear. Drawing 4 (e) Status file 106 at this time A condition is shown.

[0051] Henceforth, the status judging section 104 It is a server 4. It waits for restoration of a side system. In addition, the status judging section 104 When the waiting flag for restoration is then set, the notice indication signal of a down is not outputted. Thereby, it is a server 4. When a side system is downed, the notice indication signal of a down will be outputted only once per the down.

[0052] When a system is restored in supervisory equipment 10 and 20, it is a control section 116 and 216. It is the application process section 100 and 200 by control. It starts. Application process section 100,200 Then prior to initiation of operation, an initiation status signal is outputted to partner supervisory equipment. For example, when an initiation status signal is received from supervisory equipment 20 in the condition of the waiting for restoration in supervisory equipment 10, it is a status file 106 about this initiation status signal. It inputs. Status file 106 A beginning flag will be set if an initiation status signal is then inputted. Status judging section 104 It is a status file 106. Server 4 downed in the condition that the waiting flag for restoration is set when the beginning flag was set It judges with what the side system restored, and is the notice section 112 of restoration. The notice indication signal of restoration is outputted.

[0053] the notice section 112 of restoration \*\*\*\* -- the status judging section 104 from -- if the notice indication signal of restoration is given -- server 1 The client 2 which a subordinate has, and 3 receiving -- server 4 It notifies that the side system was restored. Thereby, it is a client 2 and 3. A user is a server 4. It can know that the side system was restored. Status file 106 The output of the notice indication signal of restoration is then followed, and it is a status file 106. It directs to receive and to reset the waiting flag for restoration. Drawing 4 (f) Status file 106 at this time A condition is shown.

[0054] server 4 restored in supervisory equipment 10 from -- if an initiation status signal is received -- above -- a client -- server 4 while notifying restoration of a side system -- the status judging section 106 from -- an initiation status signal is outputted to supervisory equipment 20, and a status signal is outputted every time interval T2 during operation. On the other hand, in supervisory equipment 20, reception of the initiation status signal from supervisory equipment 10 outputs a status signal to supervisory equipment 10 every time interval T2 during operation. Henceforth, each supervisory equipment supervises each-other destination system.

[0055]

[Effect of the Invention] Since two servers supervise the operating status of a destination system mutually with each supervisory equipment according to this invention as stated above, it is not necessary to prepare the server only for expensive monitors, and the monitor of each client/server system by the system administrator of operation also becomes unnecessary. Moreover, in the supervisory equipment of each server, since it notifies to a subordinate's client when a down and restoration of a destination system are detected, through the man machine interface of a client, a user can know a down and restoration of a destination system easily, and loses troublesomeness asked and made into the user of the client of the server subordinate downed and restored. Moreover, if means, such as an electronic mail, inform a system administrator of a down and restoration of a destination system from supervisory equipment, a system administrator can be automatically notified of a down and restoration of a system quickly.

[Translation done.]